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"Improving Alaska's quality of transportation through innovative technology and information exchange."

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This newsletter is funded by a grant from the Federal Highway Administration and the Alaska Department of Transportation and Public Facilities.

The Stink About Oxyfuel

If you purchased gasoline in Fairbanks or Anchorage last winter, you most likely filled your tank with oxygenated fuel. Winter sales of this fuel (a mixture of gasoline and a carbon monoxide-reducing additive) were ordered by the Environmental Protection Agency (EPA) last year in these two cities, along with 37 others nationwide. The intent was to reduce wintertime carbon monoxide levels in the nation's more polluted areas in order to meet Clean Air Act standards, but the fuel's additive of methyl tertiary butyl ether (MTBE) raised a stink with its Alaskan users.

Many residents in Anchorage and Fairbanks protested against the use of the more expensive "oxyfuel" for many reasons. Many people found that oxyfuel had an irritating smell, and others claimed that it decreased their car's performance and reliability. But more importantly,

over 300 alleged oxyfuel-related health problems were reported. Symptoms included skin irritation from oxyfuel contact, and headaches and nausea from fumes.

When a scientific study done at the University of Alaska Fairbanks during January and February concluded that carbon monoxide levels only decreased by half of what the EPA had predicted, the fuel's benefits in Alaskan temperatures were questioned. Temperatures can drop to minus 70 °F in Fairbanks, while Anchorage weather brings milder sub-zero temperatures. The EPA's testing of the fuel had never been done in temperatures less than 20 degrees above zero.

This study's findings and increasing health concerns prompted Alaska Governor Walter J. Hickel to issue an emergency order to suspend oxyfuel.
(continued on page 4)

View After T²

by John Martin

Alaska's Technology Transfer Program was established in 1986, when Alaska DOT&PF and the University of Alaska Fairbanks received a \$62,500 grant from the Federal Highway Administration to provide technical assistance to State and

local highway agencies. The first year turned out to be quite a scramble to organize. A newsletter needed to be developed to advertise the program, a training program needed to be implemented, a library needed to be established and numerous

housekeeping details had to be ironed out. Excellent groundwork was laid for today's program, however.

The highlight of my experience with T² was the national meeting held in Fairbanks in 1990. There was much skepticism as to whether Alaska could host a productive and effective meeting. Many said it couldn't be done—not in Alaska. They said few would be able to come, for a number of reasons, but the pioneer spirit was alive and well! Alaska T² not only

ALASKA TRANSPORTATION
TECHNOLOGY TRANSFER

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Goodbye and Thank you

The Alaska T2 Program bids goodbye to four of our board members: Advisory Board Chair, John Martin, former Chief of Planning and Administrative Services, Northern Region; Dean Nordenson, former Street Superintendent for Juneau City and Borough Public Works; Len Bunts, Kenai Peninsula Borough Representative, and Roy Carlson, former Public Works Director of the Matanuska-Susitna Borough. We thank them for their input and for helping to promote T2 services. ♦

Welcome

We would like to welcome new T2 board members Bill Ellis, Juneau City and Borough Public Works; Julie Robles, Grants Division, North Slope Borough; Fred Korpinen, Road Maintenance Director, Kenai Peninsula Borough; and Jim Swing, Public Works Director, Matanuska-Susitna Borough.

The Alaska T2 Program also has a new Advisory Board chair, Jonathan Widdis, Manager of Capital Projects Planning, Northern Region. ♦



News & Views

PC-TRANS News

Toll-Free Fax Line

PC-TRANS has established a toll-free telephone fax line dedicated to sales and technical support services. The number is (800) 245-8760, and is available 24 hours a day.

Catalog Update

PC-TRANS, an FHWA-designated software distribution center, announces the availability of its 1993 catalog of transportation-related software products. This easy-to-use, free catalog is organized into 11 areas of application: environmental engineering, highway engineering, hydrology, management aids, mapping & GIS, structural engineering, surveying, traffic engineering, transit operations, transportation planning,

utilities, and miscellaneous. The catalog is also indexed by title. To request your free copy of the catalogue, or for a free subscription to *pc-trans* magazine, call PC-TRANS at (913) 864-5655.

Software Directory Revamped

The *PCs in Transportation Software Directory* is the most comprehensive reference of its kind, listing nearly 800 transportation-related software and information sources. The 1993 edition, now available from PC-TRANS, contains almost 100 new listings and comes in either a 3-ring bound hard copy or software diskette format. Either format is \$35, but software format purchasers can qualify for a reduced price of \$25. For more information or to order the *Directory*, call PC-TRANS at (913) 864-5655. ♦

TDD Announcement

The Alaska Technology Transfer Program and Alaska DOT&PF Northern Region now have a dedicated phone line and text telephone for communicating with people who have hearing and speech disabilities. The telephone number is:

(907) 451-2363. ♦



LTAP Centers for Native Americans

Four new Local Technical Assistance Program Centers are now in operation. They were set up in response to the ISTEA, which requires that at least two centers be established to provide technical assistance and training to Native American tribal governments:

Technology Transfer Center for American Indians
Montana State University
Rural Technical Assistance Program
Dept. of Civil/Agricultural Engr.
Bozeman, MT 59717



Technology Transfer Center for American Indians
Michigan Technological University
1400 Townsend Drive
Houghton, MI 49931-1295

Technology Transfer Center for American Indians
Eastern Washington University
Dept. of Urban and Regional Planning
MS-50, Isle Hall
Cheney, WA 99004

Technology Transfer Center for American Indians
Colorado State University
Colorado Transp. Information Center
Room A115-ERC
Fort Collins, CO 80523

The operation of the centers is jointly funded by FHWA and the Bureau of Indian Affairs, U.S. Department of the Interior.

Recently, the Alaska Technology Transfer Program was offered funding from the Bureau of Indian Affairs to establish services for Alaska Native communities. The funding is contingent upon FHWA approval, and may not be forthcoming until 1994.

Adapted for Alaska from the "Alabama Transportation Newsletter," volume 11, number 2, April-May-June 1993. ♦

How Lucky Are You?

Do you know your chances...

...of winning a major state lottery
grand prize with a single ticket?

1 in 5,200,00

...of being struck by lightning in
your lifetime?

1 in 600,000

...of appearing on the Tonight
Show?

1 in 490,000

...of being injured in a car acci-
dent this year?

1 in 74

Wear your seatbelt!

From the Hope "Healthletter,"
June 1991. ♦



View After T2
(continued from page 1)

rose to the challenge, but the 1990 national meeting was called one of the best ever.

One of the key ingredients which led to successes at T2 was active participation at the national meetings. The face-to-face communication which occurs at national meetings has been and continues to be critical for the type of information exchange required to really understand the nuances and differences other states face. The national meetings are also essential for talking over strategies that will work in Alaska. For example, rather than struggling to invent effective programs for Alaska, information was readily available from other states which had already overcome similar problems. This borrowing of ideas is what technology transfer is all about: using ideas, methods and technologies developed elsewhere to be help us all "work smarter, not harder."

Today, under the able leadership of Sharon McLeod-Everette and her industrious staff, the T2 program continues to reach new highs in terms of effectiveness. Sharon has sought out additional grants and the program now receives well over \$200,000 in grant funding. The T2 audience has also grown, from 854 names in 1988 to 1445 names in 1992. This is a 40 percent increase over a four year period. So far, the 1993 audience totals 1542 people, a six percent increase over last year. T2 has mailed out 1500 publications, videotapes and software packages to the T2 audience during the 1988-1992

period. That's at least one publication per T2 audience participant.

Last year, the T2 program's newsletter, *Technology for Alaskan Transportation*, circulated approximately 1430 copies for each quarterly issue, for a total of 5720 newsletters distributed. This year, T2 expects to circulate 1542 copies each quarter for a total of 6168 newsletters, an increase of seven percent.

Course offerings are more varied and are offered across a broader geographic area, as well. The T2 program offered 65 courses, training 1983 FHWA, State, and local government, and private industry employees from 1988-1992, an average of 397 transportation professionals per year. As of September 20, 1993, the T2 program has had 10 courses with a total of 180 employees trained.

My work with Alaska T2 helping colleagues be more effective in the face of continuing pressures to do more with less was indeed very rewarding. Alaskans are fortunate to have a program that is a leader among leaders.

John Martin was actively involved in Alaska's Technology Transfer Program since its inception. He served as the first Alaska T2 program director, from 1986 to 1988 when he assumed the role of chairman of the T2 advisory board. Martin served as the chairman of the board until the spring of 1993 when he accepted the position of Senior Airport Planner at TRA-Black and Veatch Airport Consulting's Seattle Headquarters. ♦

The Continuing Saga of Salt

The public demand for safe winter streets and highways should help keep elected officials sensitive to preserving driving safety, says Marquette University professor David Kuemmel.

Kuemmel cited the 1992 report from Marquette's Center for Highway and Traffic Engineering as evidence of the value of snow and ice control as a public service to motorists at the American Public Works Association's 33rd Annual North American Snow Conference April 19.

"Our report clearly establishes the link between performance of an essential public works service and reduced injuries and accidents on the highways," said Kuemmel, director of the transportation center. "Deicing and plowing pay for themselves within the first 25

minutes after the first hour that salt is spread on two-lane highways."

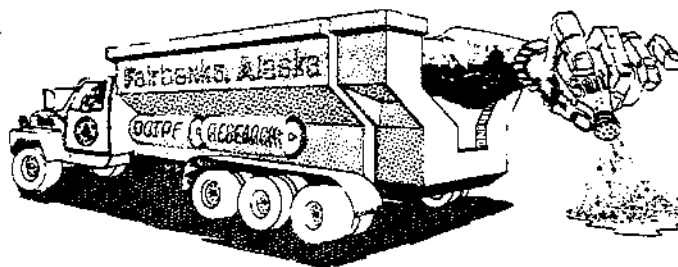
During the first four hours after the hour of application of salt, direct road user benefits were \$6.50 for every \$1 spend on direct maintenance costs for the operation, the Marquette report found. As soon as 71 vehicles drove over the highway, the average direct costs were offset by direct benefits.

Deicing is one of the best investments of taxpayer dollars in terms of benefits/cost ratio, Kuemmel said.

"Its dramatic accident and injury reduction rate translates directly into an impressive

benefit/cost statistic," he said.

For more information, contact Professor Kuemmel at (414) 288-3528. ♦



The Stink About Oxyfuel
(continued from page 1)

use in Alaska until further testing could be done.

Since then, health and oxyfuel tests have been conducted in New Jersey, Alaska, Connecticut, and New York. The tests found no substantial connections between alleged health problems and MTBE, however. Epidemiology, animal toxicity, and human clinical studies were performed which consisted of nasal, pharmacokinetics, and ocular tests. Human populations were surveyed in addition to clinical testing. The conclusion of preliminary data

from the EPA Clinical Lab stated that a one hour exposure of healthy subjects to 5 mg/m³ of MTBE resulted in the detection of a mild odor, no symptomatic responses, and "no findings suggestive of ocular or nasal inflammation, cell damage, or irritation." Effects on susceptible subpopulations or effects of other higher exposure scenarios were said to be "unknown." The study also said that if the symptoms reported by oxyfuel users are related to MTBE, they appear to be "mild and transient," but that the EPA "cannot rule out" the possibility of health effects in Fair-

banks because of "unique meteorology and topography."

As of September 1993, gas-purchasers in Fairbanks and Anchorage will not be required to use oxyfuel. This decision is not final, however, as the EPA is still wavering. According to the governor's office, Alaskans may be given the option to decide on

the issue themselves. But, if oxyfuel is not used, an alternative pollution-fighting measure must be implemented. Some alternatives debated include banning cars with excessive exhaust emissions from driving in the winter, and requiring the use of engine heaters.

(Cold starts account for two-thirds of carbon monoxide emissions from vehicles, according to UAF researchers.) If oxyfuel is used, refineries would have 75 days to produce and deliver it to vendors.

Research for this article done by MSgt. David Luera, United States Air Force, 3rd Transportation Squadron, Elmendorf AFB, Alaska. Health study information taken from the EPA's Health Effects Research Laboratory's study entitled, "Potential Health Effects of MTBE Oxyfuels," by Timothy R. Gerrity, Ph.D. ♦

According to the Department of Environmental Conservation (DEC), oxygenated fuel's exhaust emission fighting capabilities were discovered by accident. Researchers were adding methyl tertiary butyl ether (MTBE) to gasoline to boost the octane rating after lead was being phased out. During testing, engines using gasoline with MTBE had lower carbon monoxide emissions than those using gasoline without the additive.

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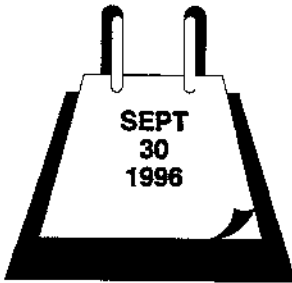
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How to Convert to Metric Highways

The United States is converting its highways to the metric system, and the magic date is September 30, 1996. After that date, no highway



projects may be paid for with Federal lands highway or Federal-aid highway funds unless they are completely in metric units. It is anticipated that all State, county, and local highway agencies will convert their operations to metric on this date so that they can continue to receive Federal funds.

Large and small highway agencies can follow the same general conversion steps. The following steps summarize a practical approach to metrification:

1. The agency leadership demonstrates metric support. Visible commitment by top management is the only way that employees will know that metrification will truly occur, and thus give it their full effort.
2. A metric coordinator is named. This job is of extreme importance. For large agencies, the coordinator may be a full-time job with a support staff and independent budget.

3. A metric committee or work group is formed. Each unit, such as maintenance or design, in the agency should have a representative on the committee. That person acts as the prime metric contact for that unit.

4. The committee identifies activities and programs to be converted.

5. The agency conversion plan and timetable are formulated. Tying the changeover to the organization's annual cycle of business can make development of construction programs convenient and can simplify financial and other reporting changeovers.

6. Conversion responsibilities are assigned to individuals and sections of the agency.

7. Metric standards are established. ASTM E380 Standard of Metric Practice has been adopted by the FHWA. AASHTO, FHWA, and TRB policies and guides are being converted to metric. Almost all such publications should be converted by the end of 1995.

8. A public awareness program is planned and conducted. As a driver learns more about the metric system, he or she accepts it more readily. Public acceptance will be a key to successful metrification.

9. Laws and statutes are revised to reflect metric units and to encourage the conversion process. This usually lengthy process should be begun early.

10. Coordination efforts are conducted with other governmental agencies, industry, contractors, material and equipment suppliers, professional organizations, and others.

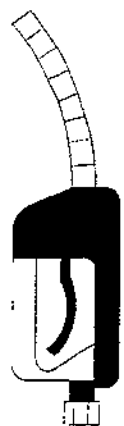
11. Metric training activities are conducted. The best training advice is to supply each employee only the amount of training he or she needs and to present the training just before the employee will first use it.

12. The plan is monitored and modified as necessary to ensure implementation.

Agencies are not asked to use all the items in the preceding list, nor must they follow the list sequentially. The choice of steps and the amount of emphasis to place on individual steps are decisions to be made by each agency while forming its plan.

Importance of the Coordinator

The metric coordinator's job will be highly complicated. On one hand, he or she will be faced with diverse questions from all parts of his or her own agency. How long is a station: 100 meters or one kilometer? Are we converting our agency-wide gasoline pumps to liters? Will we require utilities which are accommodated on our right-of-way to submit permits and drawings in metric units?



The metric coordinator will also work with metric materials suppliers, representatives from professional groups, and State and Federal employees who administer Federal-aid funds. This important job cannot be left to junior staff members. He or she must have personal interest in the metric system and should have the standing in the organization to make most of the metric decisions on independent authority. The coordinator should also have the power to request the assistance of others as required to carry out his or her duties.

Priority Items

Each item in the list of general conversion steps is important. However, the metric coordinator may recognize that two steps must be initiated early, as they have long planning and execution times.

• Metrication will affect many types of measurement and signing, including:

- Speed Limit.
- Commercial vehicle registration data.
- Vehicle size and weight limits.
- Overweight and oversize permit regulations.

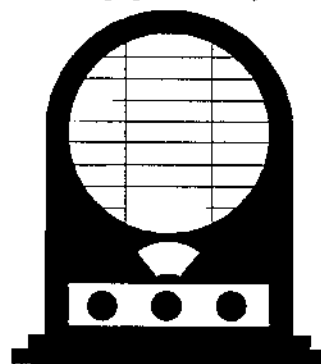
- Stopping and parking regulations.
- Definitions.
- Miscellaneous driving rules.
- Equipment regulations.

Changing laws and regulations can be a lengthy and time-consuming procedure. For example, if speed limits are set by law at 30 mi./hr. for most municipal streets, those laws or regulations must be changed before metric speed limit signs can be erected. The special knowledge of the agency's attorneys may be used to review codes, regulations, and policies to identify and change those impacted by the conversion.

If agencies are not careful, the general public may first realize that highways are changing to the metric system when highway signs posted in kilometers are erected. Such a situation would be counterproductive, especially as an attempt in 1975 to convert the nation to the metric system failed largely because of a public outcry against it.

The Canadian experience indicates that any aspect of metric conversion that might spark public concern must be faced squarely in order to avoid backlash. Posting of metric speed limits turned out to be a non-event in Canada thanks to a soundly conceived public aware-

ness campaign. Canada used national TV ads which ran as public service announcements. They also obtained extensive free radio and print media coverage, distributed specially prepared awareness materials at public contact points, and put up special notice signs and ads in newspapers. They feel that



this was the reason that the change-over went very smoothly and was largely a non-event.

In the United States, the U.S. Department of Commerce is the coordinating agency of the metric conversion. However, they have not been given extensive funds for a public awareness campaign. Thus, agencies at the state and local level may need to plan and execute their own public awareness campaigns.

This article reprinted with permission from "Better Roads" Magazine, September 1993 issue.

What Alaska DOT&PF is Doing

The Alaska DOT&PF is working hard to come up to speed with metrication. In 1992, the Commissioner appointed Jerry Murphy from E&O Standards at Headquarters to act as the Statewide Metric Coordinator. Murphy can be reached at 465-6961.

In August 1993, regional coordinators were also appointed:

Central Region—Mike Tooley, D&C, 266-1700

Northern Region—Rod Platzke, D&C, 451-2214

Southeast Region—Bob Hungerford, D&C, 465-4492

Alaska Marine Highway System—Harold Moeser, Admin., 465-8868

Headquarters Materials—Earl Ellis, E&O, 269-6237

Additionally, the ADOT&PF has established a metric task force which is holding meetings and conducting surveys to assess the department's needs, costs, and scheduling of metric conversion. Task force members are:

Jerry Murphy, Headquarters, 465-6961—chair, scheduling and librarian

For More Information

For back issues of our newsletter and inserts, or to get on our mailing list, write: Alaska Transportation Technology Transfer Program, Department of Transportation and Public Facilities, 2301 Peger Road, M/S 2550, Fairbanks, Alaska 99709-6394. For more information, you can also call (907) 451-5320.

Bruce Bowler, Headquarters, 465-6955 – procedures and preconstruction surveying standards

Jim Beeson, Headquarters, 465-6965 – legislation, regulations, and city/borough ordinances

Leo Lutchansky, Headquarters, 465-6992 – public affairs and funding

Rosemary Matt, Headquarters, 465-6960 – construction surveying standards

Tim Mitchell, Headquarters, 465-6959 – national standards (AASHTO) and databases and surveys

Carol Shelp, Headquarters, 465-8977 – training

Steve Boch, FHWA, 586-7544 – resources and guidance

Duane Horn, Headquarters, 465-2907 – computer programs and regional assistance

Mike Higgs, Headquarters, 465-8896 – structures and hydraulics

An ADOT&PF departmental metric policy has been developed. See DPOL 02.01.020.

Currently, an ADOT&PF metric conversion plan is being drafted and will include time tables for the conversion of standards, equipment, materials and supplies, development of projects, administrative systems, training and public awareness. Many of the metric standards will be provided to ADOT&PF from AASHTO and FHWA.

The task force is also in the process of identifying which laws will be affected by metrication.

As part of initiating a successful metrication program, ADOT&PF has contacted the following governmental agencies: the Office of the Governor, the

Alaska Department of Commerce & Economic Development, the Office of International Trade, FHWA and the AASHTO Metric Task Force.

Metric information has been distributed, too. Hard conversions have been received from AASHTO and distributed to ADOT&PF designers for use in future metric designs. Other hard conversions will be issued as they are available. Metric checklists were developed from the draft AASHTO conversion guide and issued to all ADOT&PF functional units.

Metric pilot projects are also being started. These involve the use of metric units on selected construction projects using "soft" conversions.

Training and training materials are available, too. For example, the Alaska Technology Transfer (T2) Program office in Fairbanks has a metric training module called "SI Metric in the Workplace" available for use. This course consists of five videotapes and a workbook. Total time needed to complete the course is three to four hours. Contact Susan Earp at the Alaska T2 Program, 451-5320, for more information.

The General Service Administration has also developed a metric course which they are offering to state DOTs. Metric courses in Alaska are scheduled for the first week of November. Courses will be in: Juneau on November 3, Anchorage on November 4, and Fairbanks on November 5. There is no registration fee. ADOT&PF is also sponsoring NHI Course #12301, Introduction to Metrics for Highway Agencies, on March 7, 1994, in Anchorage..

If you have any questions or concerns about metrication, or you would like to locate resources for more information on metrication, contact the Regional Coordinator in your area.

Rules for Writing Metric Symbols and Names

- Print unit symbols in upright type and in lower case except for liter (L) or unless the unit name is derived from a proper name.

- Print unit names in lower case, even those derived from a proper name.

- Print decimal prefixes in lower case for magnitudes 10^3 and lower (that is, k, m, and n) and print the prefixes

in upper case for magnitudes 10^6 and higher (that is, M and G).

- Leave a space between a numeral and a symbol (write 45 kg or 37 °C, not 45kg or 37°C).

- Do not use a degree mark (°) with kelvin temperature (write K, not °K).

- Do not leave a space between a unit symbol and its decimal prefix (write kg, not k g).

- Do not use the plural of unit symbols (write 45 kg, not 45kgs), but do use the plural of written names (several kilograms).

- For technical writing, use symbols in conjunction with numerals (the area is 10 m²); write out unit names if numerals are not used (carpet

is measured in square meters). Numerals may be combined with written unit names in nontechnical writing (10 meters).

- Indicate the product of two or more units in symbolic form by using a dot positioned above the line ($\text{kg} \cdot \text{m} \cdot \text{s}^{-2}$).
- Do not mix names and symbols (write N m or newton meter, not N meter or newton m).

Rules for Writing Numbers

- Always use decimals.
- Use a zero before the decimal marker for values less than one (write 0.45 g, not .45 g).
- Use spaces instead of commas to separate blocks of three digits for any number

over four digits (write 45 138 kg or 0.0004 46 kg or 4371 kg). Note that this does not apply to the expression of amounts of money.

Conversion and Rounding

- When converting numbers from inch-pounds (feet and inches, pounds and ounces) to metric, round the metric value to the same number of digits as there were in the inch-pound number (11 miles at 1.609 km/mi equals 17.699 km, which rounds to 18 km).
- Convert mixed inch-pound units to the smaller inch-pound unit before converting to metric and rounding (10 feet, 3 inches = 123 inches; 123 inches x 25.4 mm = 3123.2 mm; round to 3124 mm).

- In a "soft" conversion, an inch-pound measurement is mathematically converted to its exact (or nearly exact) metric equivalent. With "hard" conversion, a new rounded, rationalized metric number is created that is convenient to work with and remember.

- Under a "soft" conversion, the size of an 8 X 11 in. piece of paper would remain the same but would be dimensioned as 215.9 mm by 279.4 mm. (1 in. = 25.4 mm.)
- Under a "hard" conversion, paper would be sized to convenient metric dimensions, possibly 210 mm X 280 mm or 220 mm X 280 mm. The hard conversion would result in a sheet of paper slightly different in size than our now standard 8 X 11.

Reprinted from the "The Metric Guide for Federal Construction."

For More Information

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Networking the Workplace

by Billy Connor

WHY NETWORK? All of us who use computers in the workplace will, sooner or later, be networked. At first this may seem like a bold statement, but consider how much the fax machine has altered how you work. The fax machine affords us the ability to rapidly "within seconds" transmit documents and information. If an original is required, we send the fax and then drop the original in the mail. This provides quickness while saving the cost of overnight mail.



As many computer users know, networks give us far greater capabilities. We can share information with colleagues down the hall or halfway around the world. If everyone is using a common database, the problem of having old copies of data can be eliminated.

We can leave messages to be read at the receiver's convenience through electronic mail. If the message is to be read immediately, an urgent message can be sent letting the person on the other end know you need an answer now. Information can be distributed quickly, without the cost of photocopying, by broadcasting over the network.

In busy offices, scheduling meetings can be a real problem. Through networking, attendee's schedules can be checked and a meeting can be scheduled when all are free. The attendees are notified automatically with an agenda attached.

One of the most often touted feature of networks is the ability to serve applications. This means the network acts much like another hard drive on your computer. In larger organizations, software costs can be reduced through a reduction in the number of copies of the software that must be purchased. Further, the cost of installation is reduced since the software is installed only once. You may wonder how you can reduce the number of copies. Assume that only half of the people in your office will be using Lotus at one time. This means you can buy half as many copies. At \$400 a copy, the dollars saved can be significant. Many companies offer special pricing for networked software.



All the advantages of networking are not without costs. The cost is directly related to the size and features desired. There are basically two types of networks: local networks (LAN) and wide area networks (WAN). LANs can be

further divided into ad-hoc and administered networks, while WANs connect two or more LANs.

NETWORK ARCHITECTURE Before we discuss the advantages and disadvantages of each type of network, it is necessary to have a rudimentary understanding of network architecture. Networks are composed of four basic parts: the fileserver, the network operating system, the topology and the workstation. Each of these pieces work independently and communicate through an appropriate interface. Let's discuss each of these parts.

The fileserver is essentially a computer similar to the one on your desk. The machine is usually enhanced through the addition of very large hard drives, tape drives, large memory availability, CD readers and fax/modems. All of these enhancements provide functions to the user as if they were on the workstation.



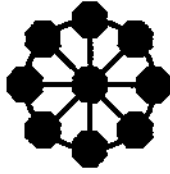
The network operating system tells the machine what to do when you, the user, make a request. In many respects it is like an operating system such as DOS, OS/2 or System 7 on your desktop machine. The only difference is that it performs functions necessary for the network.

LAN LAN LAN Examples of network operating systems are LAN Server, Novell, and LAN Manager. Most of us really don't care what the networking system is. All we care is that it gives us the services we want.

The topology provides the communication system for the network. It is much like the wire between your computer and the printer. Information passes between the fileserver and the computer through this conduit. The most common topology is Ethernet. Another common topology is Token Ring. While networking jocks argue the merits of various topologies, all you need to know is that your workstation talks to the network over the wire in the back of the computer.

The workstation is the computer on your desk. It has its own operating system. Your operating system does not need to be the same operating system as the network operating system. For example, your network operating system may be LAN Manager operating under OS/2, while your workstation operating system may be DOS. You can even attach your Macintosh to the network. The workstation and network fileserver work independently and communicate through the wiring between them.

Ad-hoc networks include Windows for Workgroups and Novell Lite. These networks are designed for small groups who need to share information, but who do not need the features of fully integrated networks. These systems share hard drives, printers and other peripherals readily. In effect, each machine attached to the network becomes a fileserver. The system still requires you to select and install the communications topology. Ad-hoc networks are low cost systems, but are limited in capability. Perhaps the biggest disadvantage of these systems is the lack of controls and relatively low security. However, in a small office, ad-hoc may be the ticket.



Locally administered networks usually cover a department, a building, or in some cases, a group of buildings. A LAN has one or more file servers and always requires a network administrator. The network administrator maintains the server, installs new software on the server, and attaches new workstations to the network. The administrator may be a part-time or a full-time person depending on the size and complexity of the network.

WAN WAN WAN As I mentioned earlier, WANs provide networking of two or more LANs. The WAN may be citywide or worldwide. While the WAN technology is more complex, the basic function of a WAN is the same as a LAN except it covers a wider area. You the user may not even know that you are communicating over a WAN. WANs do require a significant personnel investment to operate and maintain, however.

TO NETWORK OR NOT TO NETWORK

You're probably wondering if your office should invest in networking and if so, which one you should pick. If you are in a small office, and you don't share much data, you don't need to network. The little data you share can be handled through the "sneakernet"—carrying a disk to the other machine. But, if you need immediate access to the latest information such as budget revisions, you might consider one of the ad hoc networks. If your office is larger than five people, consider a fully administered LAN.

Don't consider a WAN unless you really need to share a lot of information regularly. They are expensive to install and maintain. If you need to share data in a small organization, consider dial-in capabilities for your LAN, or consider one of the services such as Compuserve to fill that need.

If your organization is large enough to need a WAN, it probably has a group that is responsible for computing. Let them worry about WANs.

CHOOSING THE RIGHT NETWORK Selecting the right network for your needs is difficult. I suggest you work with local vendors to select the network operating system and topology. Before you call the vendor, write down the features you desire, including the number of workstations, workstation operating systems, electronic mail needs, the types of files to be shared, the types of applications to be served and any other features you want. Rank the features in order of importance. As you talk to the vendor, make sure you get an idea of the cost and the level of support needed from the network administrator. Require the vendor to provide names and phone numbers of users of their network in your area. Contact these users and arrange a visit with their network administrators. Ask them questions concerning down time, difficulty of maintenance, user satisfaction, etc.



When you make your selection, consider contracting the initial planning and installation. Unless you have someone in your organization with specialized networking experience, contracting will save you time and money. Make sure your network administrator is involved every step of the way. After all, the administrator will be responsible for maintaining the system. Finally, get plenty of training for your administrator. Training will avoid many hours of frustration. Finally, find a backup for your administrator. Inevitably, when the administrator goes on vacation the network will crash. The backup person does not necessarily need to know everything, but he or she should know how to get the network up and running again.

SUMMARY Deciding to implement a network should come only after carefully considering the benefits and the costs, both long and short term. Because a network represents a significant cost, carefully talk to vendors and users. Ask pointed questions. Make sure you have adequate answers before you select your network. Except for ad hoc networks, it is usually better to contract the planning and installation of the network. Unless you have some very knowledgeable people, don't try it yourself.

Make sure your network administrator has the proper training. The costs will certainly be lower if you do. Select a backup for the backup and provide training for that person as well.

Finally, networking is not for every organization just yet. While literature reports all the marvelous things networks can provide, don't buy in until you need to. Don't worry about falling behind. Technology will continue to improve. As a result, networks will continue to improve and become easier to maintain. By waiting, you may well avoid many of the growing pains of today's networks.

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Place a check by the publications you wish to borrow.

- _____ **1991 Conference Proceedings: National Conference on HOV Systems April 28 - May 1, Seattle, WA, ID-1045, TRB/NRC #384, December 1991, 303pp.**
- _____ **ACI Manual of Concrete Inspection, ID-1057, ACI Publication SP-2, July 1990, 545pp.**
- _____ **ACI Manual of Concrete Practice 1991, ACI, 1991.**
- _____ **ID-1062A Part 1: Materials and General Properties of Concrete, 300pp.**
- _____ **ID-1062B Part 2: Construction Practices and Inspection Pavements, 300pp.**
- _____ **ID-1062C Part 3: Use of Concrete in Buildings - Design, Specifications, and Related Topics, 550pp.**
- _____ **ID-1062D Part 4: Bridges, Substructures, Sanitary, and Other Special Structures and Structural Properties, 500pp.**
- _____ **ID-1062E Part 5: Masonry, Precast Concrete, and Special Processes, 400pp.**
- _____ **Concrete In Transportation, ID-1058, ACI Publication SP-93, 1986, 929pp.**
- _____ **Design of Riprap Revetment, ID-1065, USDOT/FHWA, FHWA-IR-89-016, March 1989, 169pp.**
Hydraulic Engineering Circular No. 11.
- _____ **Diametral Tests for Bituminous Mixtures, ID-1063, USDOT/FHWA, FHWA-RD-91-083, January 1992, 143pp.**
- _____ **Distress Identification Manual for the Long Term Pavement Performance Studies, ID-1046, SHRP/NRC, SHRP-LTPP/FR-90-001, October 1990, 74pp.**
- _____ **Effect of Rigid Overlays on Corrosion Rate of Reinforcing Steel in Concrete Bridge Decks: Final Report, ID-1050, Construction Technology Laboratories, Inc., October 1991, 39pp.**
- _____ **Effect of Surface Contaminants on Coating Life, ID-1064, USDOT/FHWA, FHWA-RD-91-011, November 1991, 256pp.**
- _____ **Evaluation of Concrete Pavements In The Phoenix Urban Corridor, Arizona DOT, Volume I: Final Report, ID-1053, September 1991, 167pp.**
- _____ **Evaluation of Concrete Pavements In The Phoenix Urban Corridor, Arizona DOT, Volume II: Appendices, ID-1052, FHWA-A291-264-II, September 1991, 223pp.**
- _____ **An Evaluation of the Houston High-Occupancy Vehicle Lane System, ID-1041, Texas Transportation Institute, TTI: 2-10-89/3-1146-4, June 1991, 228pp.**
- _____ **Experimental and Analytical Analysis of Blasting Criteria, ID-1049, FHWA/OH-91/008, Ohio University's Center for Geotechnical and Groundwater Research, October 1991, 104pp.**
- _____ **Fatigue of Concrete Structures, ID-1058, ACI Publication SP-75, 1982, 401pp.**

_____ **Guidelines for Transit-Sensitive Suburban Land Use Design**, ID-1047, USDOT/FHWA, DOT-T-91-13, July 1991, 166pp.

_____ **Highway Safety: Trends in Highway Fatalities 1975-87**, ID-1051, U.S. General Accounting Office, Report to the Chairman, Subcommittee on Investigations and Oversight, Committee on Public Works and Transportation, House of Representatives, GAO/PEMD-90-10, March 1990, 104pp.

_____ **Influence on Traffic Surface Age and Environment on Skid Number**, ID-1054, Ohio DOT, USDOT/FHWA, FHWA/OH-91-013, ODOT, Job No. 14460(0), January 1992, 313pp.

_____ **Manual for the Design of Bridge Foundations**, ID-1056, NCHRP Report 343, TRB/NRC, December 1991, 308pp. Includes: Shallow Foundations, Driven Piles, Retaining Walls and Abutments, Drilled Shafts, Estimating Tolerable Movements, Load Factor Design Specifications and Commentary.

_____ **Procedures and Equipment for Conducting Vibration and Moisture Tests on Truck Mounted Attenuators (TMA's)**, ID-1044, Texas Transportation Institute, TTI: 2-4-89-991-3F, August 1991, 27pp.

_____ **Repair and Rehabilitation of Concrete Structures, Compilation 10**, ID-1061, ACI, 1989, 92pp.

_____ **The Significance of Pavement Design and Materials In D-Cracking: Final Report**, ID-1048, Job No. 14334(0), Construction Technology Laboratories, Inc., FHWA/OH/91/009, October 1991, 165pp.

_____ **Special Topics In Concrete Placement, Compilation II**, ID-1060, ACI, 1990, 61pp.

_____ **Synthesis of Safety Research: Pedestrians**, ID-1055, USDOT/FHWA, FHWA-SA-91-034, August 1991, 102pp.

_____ **Texas Ranking of Interchange Projects - Trip, PC Interchange and RR Grade Separation Benefit-Cost Program**, ID-1042, Texas Transportation Institute, TTI: 2-8-87-1105-1F, November 1988, 69pp.

_____ **The Urban Transportation Planning Database**, ID-1043, Texas Transportation Institute, TTI: 2-1-90-996-1F, December 1990, 39pp.

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Place a check by the videos you wish to borrow.

- _____ Repetitive Motion Injury: Prevention Is In Your Hands, ID-254, Bureau of Better Business Practices, 15min.

ADDITIONAL PUBLICATIONS AVAILABLE FOR LOAN

Place a check by the publications you wish to borrow.

- _____ Assessment and Improvement of Motorist Understanding of Traffic Control Devices, ID-1079, Texas Transportation Institute, Texas A&M University System, College Station, Texas, Texas DOT, TTI: 2-18-91-1261, Research Report 1261-1, June 1991, 116pp.
- _____ Assessment of the Fishery Improvement Opportunities on the Pend Oreille River: Annual Report FY1990, ID-1074, U.S. Department of Energy, Bonneville Power Administration, Department of Fish and Wildlife, Upper Columbia United Tribes Fisheries Center, Eastern Washington University, March 1991, 350pp.
- _____ Assessment of the Fishery Improvement Opportunities on the Pend Oreille River: Appendices: Annual Report 1990, ID-1075, U.S. Department of Energy, Bonneville Power Administration, Department of Fish and Wildlife, Upper Columbia United Tribes Fisheries Center, Eastern Washington University, March 1991, 338pp.
- _____ The Costs of Highway Crashes, ID-1068, USDOT/FHWA, FHWA-RD-91-055, October 1991, 152pp.
- _____ Developing a Predation Index and Evaluating Ways to Reduce Salmonid Losses to Predation in the Columbia River Basin: Final Report August 1988 - September 1990, ID-1070, U.S. Department of Energy, Bonneville Power Administration, Division of Fish and Wildlife, Oregon Department of Fish and Wildlife, Oregon State University, University of Washington, December 1990, 338pp.
- _____ Development of a System-wide Predator Control Program: Stepwise Implementation of a Predation Index Predator Control Fisheries and Evaluation Plan in the Columbia River Basin: Annual Report April - December 1990, ID-1076, U.S. Department of Energy, Bonneville Power Administration, Department of Fish and Wildlife, Oregon Department of Fish and Wildlife, Oregon State University, University of Washington, December 1990, 343pp.
- _____ Effects of Safety of Pavement-Truck Tire Interaction, ID-1066, USDOT/FHWA, FHWA-RD-91-012, January 1992, 133pp.
- _____ Federal and State Legislation and Policies to Transit In Texas, Research Report 1990-1, ID-1077, Texas Transportation Institute, The Texas A&M University System, College Station, Texas, Texas DOT, TTI: 2-11-91-1990, September 1991, 38pp.
- _____ Ferry Operations Feasibility Study, ID-1078, Texas Transportation Institute, The Texas A&M University System, College Station, Texas, Texas DOT, Research Report 1930-1F, TTI: 2-18-91-1930, June 1991, 33pp.

Hot Mix Asphalt Paving Handbook, ID-1067, USDOT/FHWA, October 15, 1991, 230pp. *Advisory Circular 150/5370-14.*

Kokanee Stock Status and Contribution of Cabinet Gorge Hatchery, Lake Pend Oreille, Idaho: Annual Progress Report, ID-1071, U.S. Department of Energy, Bonneville Power Administration, Division of Fish and Wildlife, Idaho Department of Fish and Game, March 1991, 69pp.

Natural Propagation and Habitat Improvement Idaho: LoLo Creek and Upper Lochsa Clearwater National Forest: Annual Report, ID-1072, U.S. Department of Energy, Bonneville Power Administration, Division of Fish and Wildlife, U.S. Department of Agriculture, U.S. Forest Service, Clearwater National Forest, 1991, 120pp.

Research to Identify Effective Antifungal Agents: Annual Report, ID-1069, U.S. Department of Energy, Bonneville Power Administration, Division of Fish and Wildlife, Oregon State University, National Fisheries Research Center, September 1991, 31pp.

Status and Habitat Requirements of the White Sturgeon Populations in the Columbia River Downstream from McNary Dam: Annual Progress Report, ID-1073, U.S. Department of Energy, Bonneville Power Administration, Division of Fish and Wildlife, Oregon Department of Fish and Wildlife, Washington Department of Fisheries, U.S. Department of Commerce, National Marine Fisheries Service, U.S. Fish and Wildlife Service, September 1991, 180pp.

TRIPCAL5-Program Specifications Informational Report #6, ID-1080, Research Report 1235-2, Texas Transportation Institute, Texas A&M University Station, College Station, Texas, Texas DOT, TTI: 2-10-90-1235, January 1991, 167pp.

TRIPCAL5 User's Manual, ID-1081, Research Report 1235-3, Texas Transportation Institute, Texas A&M University Station, College Station, Texas, Texas DOT, TTI: 2-10-90-1235, November 1990, 119pp.

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- Geodesy
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- Mapping
- Aerial videography
- Rights-of-way
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Guidelines

Written papers will be allotted 20 minutes for presentation during the technical sessions of the conference.

Please use the abstract form to submit your proposal. Indicate your desired technical program category and the topic you wish to discuss.

Proceedings

Papers will be bound and published for distribution at the conference. Proposals must include the title of the paper; name, address, and telephone number of the author(s); and an abstract of the paper. The abstract should be 20 words or less and describe the major thrust of the paper. Proposals for panel sessions will also be accepted.

Deadlines

Proposals must be received by **December 15, 1993**. Print-ready manuscripts must be received by **January 14, 1994** to be considered for publication. Fax copies will not be accepted but transmittal of information by diskettes is strongly encouraged.

Those unable to prepare a technical paper, but have a surveying and/or mapping topic to present, should contact the technical program committee to be considered for a separate lecture session. Submit proposals to/or request additional information from:

Don Davis, Jr.
(907) 786-1349

or

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Attach this form to your 8 1/2" x 11" abstract. Please limit abstract to 200 typewritten words.

Paper title _____

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OSHA and Hazardous Chemicals in Maintenance and Equipment Shops

Each year, hundreds of thousands of chemicals are produced, stored, transported and used. Also in one year, nearly 10,000 new chemicals are invented. Because many of these chemicals are hazardous to humans and the environment, the handling of these substances is serious business.

When employees are not knowledgeable about dealing with hazardous wastes and materials found in their workplace, not only is the environment and each workers' health at stake, but the business could lose a lot of money. These risks are especially true at vehicle maintenance and equipment shops which generate several types of hazardous materials and wastes as part of their daily operation.

To protect humans and the environment, Congress has passed numerous acts which affect everyone that deals with hazardous materials or wastes:

- 1969 The National Environmental Policy Act (NEPA)
- 1970 Occupational Safety and Health Act (OSHA)
- 1970 Clean Air Act (CAA)
- 1972 Clean Water Act (CWA)
- 1972 Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)
- 1974 Safe Drinking Water Act (Amended in 1986)
- 1975 Hazardous Materials Transportation Act (HMTA)
- 1976 Toxic Substances Control Act (TSCA)
- 1976 Resource Conservation and Recovery Act (RCRA)
- 1980 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

If a shop utilizes, transports or generates and disposes of hazardous substances, then it is most affected by OSHA and the RCRA. It is also under the watchful eye of the Environmental Protection Agency (EPA).

The EPA is a Congress-appointed agency designed to protect the environment and human health. The EPA holds every user of potentially hazardous wastes and materials responsible for the substance from the moment of generation, to the point which it is recycled, neutralized, or destroyed. This is called "cradle to grave" responsibility.

In 1980, the EPA issued hazardous waste regulations through the Resource, Conservation and Recovery Act (RCRA) with a three-fold goal:

1. Describe generated waste and who is the generator,
2. Track the location of all hazardous materials and wastes systematically from point of first generation to final disposal, and

3. Promote management practices that ensure the protection of the environment and human health.

In addition to the RCRA, a Federal law, each state must implement a similar law that is equivalent to RCRA and must be at least as strict.

Hazardous materials are not regulated under RCRA because they are not wastes. Storage and transportation of hazardous materials, however, is generally regulated by OSHA and Federal DOT regulations.

OSHA takes the EPA's human-protection role to a further, and more specific extent. Through OSHA, employers of any kind of business are required to provide a safe working environment for their employees. For example, the Federal Hazard Communication Standard (HazCom) administered by OSHA requires:

1. the determination of hazardous chemicals in the workplace.
2. that all hazardous chemicals be labeled.
3. that Material Safety Data Sheets (MSDS) be maintained.
4. that employers provide employees with written hazardous chemical training.

OSHA guidelines also cover all shop practices. OSHA's "Confined Space Entry Requirements," for example, dictate what is considered a confined space and what an employer must do to ensure employee safety. A confined space can be the trunk of a car, a lube pit, or a fuel tank. Before any employee is given a job, the employer must know whether or not what the employee will be asked to do is a hazard to them. OSHA requires all shop managers to brief employees of the hazards associated with each job.

Failure to meet EPA and OSHA responsibilities can result in heavy penalties. For example, in some instances, fines of up to \$75,000 per day and jail sentences of five years for responsible parties can be implemented. So how does your shop stay informed and keep out of trouble?

Keeping up with the ever-changing regulations and laws concerning worker health and environmental protection can be a full-time job. Many businesses

Did you know?

One gallon of used oil will contaminate one million gallons of fresh drinking water.

What are hazardous materials and wastes

In general, a hazardous "material" is:

1. any material that poses a threat to human health and/or the environment, or
2. a substance of designated quantity that the Environmental Protection Agency requires must be reported if spilled into U.S. waters or otherwise emitted into the environment. Typical hazardous materials are toxic, corrosive, ignitable, or chemically reactive.

A waste is any solid, liquid, or contained gaseous material that you no longer use, and either recycle, throw away, or store until you have enough to treat or dispose of. Because of their quantity, concentration, or physical chemical or infectious characteristics, hazardous wastes may:

1. cause or significantly contribute to an increase in mortality or the increase in serious irreversible or incapacitating illness, or
2. pose a substantial present or potential hazard to human health or the environment when improperly managed, treated, stored, transported or disposed.

Hazardous wastes can be either listed in EPA regulations, or a waste that exhibits one or more of these

identifying characteristics: ignitability, corrosivity, reactivity, or toxicity (as defined in the Code of Federal Regulations, title 40, part 261, subpart D). The most common of these characteristics are benzene, cadmium, carbon tetrachloride, chromium, lead, mercury, and trichloroethylene.

Another type of waste is called "acutely hazardous waste." AHWs are classified as fatal or as causing serious irreversible damage to humans in low doses when taken orally, inhaled, or absorbed through the skin.

A material can become a waste when the product is no longer going to be used for the purpose it was intended, becomes contaminated through use and is not destined for recycling.

The definitions for hazardous materials and wastes may sound similar, but the primary difference is that materials are new products (still in the drum, for example), while hazardous wastes are spent or used products.

Regardless of whether or not it is a new or spent product, tests should be done on any substance if it is unclear what it actually consists of. The best source to determine a substance's content is the Material Safety Data Sheet (MSDS), sometimes called a Hazardous Material Sheet. MSDSs should be present in every place of employment where hazardous substances are dealt with in any capacity.

have devoted full-time staff and resources to this task, and in some instances, have developed separate departments to stay up-to-date on worker and environmental regulations. Obviously, devoting full-time staff may not be feasible in many shops, but a designated employee's continual contact with the EPA (for Federal regulations) and the State Department of Environmental Conservation (for Federal and State regulations) will keep any business informed:

- Juneau EPA Office: (907) 586-7619
- Anchorage EPA Office: (907) 271-5083
- Region 10 EPA Office (Seattle) (800) 424-4372
- Alaska Department of Environmental Conservation: (907) 563-6529

Additionally, two documents have proved helpful in getting familiar with the hazardous materials and wastes programs are EPA 40 CFR 260-299 and OSHA 29 CFR 1910.1200. Both of these CFRs can be obtained by writing the U.S. Government Printing Office, Su-

perintendent of Documents, Mail Stop: SSOP, Washington, D.C. 20402-9328.

SUMMARY

The biggest asset in any business's hazardous chemical program is common sense. For example, know what and how much hazardous materials and wastes are generated by your shop and the differences in handling and disposing of each. Become familiar, and keep up with the ever changing environmental and worker safety issues. Get your people trained and keep them updated on the particular hazardous chemicals they may be handling. Keep all pertinent MSDSs in an area where anyone who needs or wants to review them may do so at any time. And, reduce the purchases of any hazardous chemicals, buy environmentally compatible products, and recycle when possible.

Written with help from TSgt. David Mann of Eielson AFB's 3rd Transportation Squadron, and Greg Zimmerman of ADOT&PF's Northern Region Environmental Section.

Demonstration Project No. 93

In 1982, the Federal Highway Administration concluded that nearly 40 percent of the fuel consumed at signalized intersections is wasted because of signal timing problems. It is estimated that poor signal timing causes a 15 percent excess of vehicle delays in our nation, a 16 percent excess of vehicle stops and a 7 percent excess of travel time, according to the FHWA.

Today, 74 percent of our nation's estimated 240,000 traffic signals are not timed to their full potential. These signals are either in need of substantial upgrades or minor adjustments which, if completed, would drastically increase fuel conservation and reduce pollution.

In fact, if all of these less efficient signals were upgraded and adjusted for optimum performance, the U.S. would save five million gallons of fuel per day! This impressive feat would be accomplished through significant reductions in delays, stops and starts and travel time. For example, the FHWA estimates that if the less efficient signals were corrected nationwide, a 5 to 25 percent reduction in travel time would result.

The initial costs of making changes to signal systems is minimal in comparison to the time and money saved over the long term. In many test cases, expenses incurred by agencies were

recouped in only two months. Test agencies that made changes to their systems reported benefit/cost ratios which ranged from 28:1 to 200:1, according to the FHWA.

Benefits for optimizing interconnected systems are 15-20 gallons of fuel saved per every dollar spent, and a 3 to 12 percent fuel savings for non-interconnected systems. As such, the FHWA ranks signal improve-

ments as the most cost-effective energy saving strategy. So why haven't these changes been made nationwide?

Traffic control technology is rapidly advancing. Traffic control equipment and software now offer the capability to dramatically reduce traffic congestion and to make our roads safer and our environment less polluted. Today's State and local highway agencies, however, are unable to keep up with the onslaught of new, hi-tech products. And as a result, agencies are unable to compare and select the best product for their control needs.

On August 25 and 26, Demonstration Project No. 93 came to Anchorage, Alaska. Thirty-eight of Alaska's traffic control engineers and technicians participated. Anchorage was the Project's 16th stop.

Charles Stockfisch, FHWA, and Dr. Ziad Sabra, contractor for Daniel Consultants, Inc., conducted the two-day workshop at the DOT&PF Maintenance Yard and the State Crime Lab in Anchorage. Attendees included consultants, and FHWA, ADOT&PF and Municipality of Anchorage employees.

"I thought it was really good," Traffic Safety Engineer for ADOT&PF Northern Region, Ron Tanner, said of Project No. 93. "There was a lot of state-of-the-art equipment there that we got to see hands on...you got to actually touch and feel." Tanner added that much of the equipment found in the Demonstration Project trailer he had only seen previously in magazines.

David Swaim, Lead Traffic Control Equipment Technician for ADOT&PF Northern Region, said he thought Demonstration Project No. 93 was very informative. "The Federal people put on a really good instructional course," Swaim said. "The comments that I heard were quite positive."

After Project No. 93's Alaskan debut, Stockfisch, trailer and crew headed back to the Lower 48 states where they had another 95 stops to make.

To address this problem, Charles Stockfisch, Chief of the Traffic and Motor Carrier Applications Branch of the FHWA, created Demonstration Project No. 93. Project No. 93 is a travelling, two-day workshop and hands-on demonstration of traffic control equipment and software. Stockfisch brings his brainchild, a state-of-the-art trailer jam-packed with traffic control equipment, to cities nationwide over the course of this two to three year program.

At Project No. 93, local and State agency traffic control engineers and senior technicians get a chance to discuss the benefits and unique features of almost all of the products

available today in detail without the pressures of vendors' sales pitches. The format of the workshop also encourages adoption and implementation of the technology that best fits each agency's control needs.

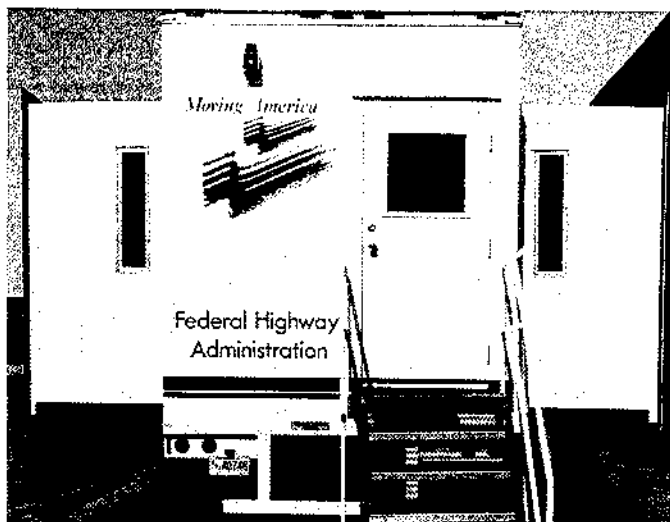
Additionally, participants see products in action during the hands-on portion of Project No. 93. The 48-foot expandable trailer Stockfisch designed contains 25 exhibits of advanced traffic control technol-

ogy, 85 percent of the traffic control market. All equipment is fully operational and simulates on-street conditions.

Equipment displayed in the trailer includes advanced traffic controllers; diagnostic equipment; auxiliary input and output devices; communications equipment; power supply and transient protection equipment; closed-loop, distributed and hybrid traffic control systems; and signal timing plan software. Many of these products are marketed as Intelligent Vehicle System (IVHS) technology. IVHS is a sophisticated, long-range program to address growing urban traffic congestion.

Once agencies know about the benefits of signal optimization, however, there is still a question of funding. It is estimated that signal timing optimization costs

\$300-400 per intersection for interconnected systems (\$760-\$2,700 for non-interconnected). Most agencies don't have this kind of money available in their existing budgets to make any system changes or upgrades immediately. But, once the agency is informed of their retiming options, a long-range plan can be developed and incorporated into future budget proposals.



Demonstration Project No. 93 48' expandable trailer.



Leslie Mitchell, Alaska Central Region DOT&PF Planning, working at a Demo Project No. 93 trailer exhibit.



Charles Stockfisch, Federal Highway Administration, (center) explains the different workstations to Bill Snyder, Municipality of Anchorage, (left) and David Swaim, Alaska Northern Region DOT&PF, both traffic control technicians, who assisted Stockfisch and Sabra with the hands-on portion of the training.

Who's Who in Alaska's Transportation

Spotlight on Craig S. Powley, Senior Master Sergeant, Vehicle Maintenance Superintendent, 343d Transportation Squadron, Eielson Air Force Base

A 45-pound salmon lured T2 board member Craig Powley to Alaska, but his job of making sure over 800 vehicles stay running here doesn't allow him much time to fish.

Born and raised in Rochester, New York, Powley developed a love for working with automobiles while still in high school. His father owned a local garage where he got his first taste of working on cars and trucks.

In 1970, Powley joined the Air Force with hopes of working on airplanes, but he would soon find out that life in the Air Force is full of surprises.

He wound up as a heavy equipment mechanic and over the next six years he was stationed in Illinois, the Philippines, and then in Utah. The positions he held varied from being a parts researcher, a parts store manager, a vehicle maintenance inspector, a supervisor and a lead mechanic. Perhaps feeling like he was caught up in a whirlwind of ever-changing environments and duties, when the Air Force asked him if he would take another job that would require more travel, he said no.

"Two weeks later I had orders for Alaska," Powley said. Another two weeks later, Powley and his wife of seven years, Nancy, were on their way to King Salmon, Alaska, located at the start of the Aleutian Chain, near Dillingham. While in King Salmon, Powley picked up experience as a base maintenance equipment and special purpose vehicle mechanic. He also picked up an admiration for Alaska.

"I knew after the first two days of near total daylight and the mountains and wilderness that this was the place for me," Powley said.

But, the Air Force again had

other plans for the Powleys. In 1978, Powley was slated to leave Alaska and to go back to Illinois. But before he left, a near 50-pound fish convinced him that he should return to the frozen north someday.

"My first 45-pound King Salmon was the clincher," said Powley, a fisherman who also enjoys hunting, camping, hiking, skiing and biking. "I knew I had to come back to Alaska."



While in Illinois, Powley was selected to be a base maintenance vehicle instructor at Chanute Air Force Base. Teaching courses such as engine and electrical system theory, Powley found a new love — sharing what had become his extensive maintenance experience with others. Powley taught over 600 apprentice and journeyman mechanics during this four-and-a-half year stay in Illinois.

The Air Force promoted Powley in 1983, and although this meant yet another move, he was reassigned back in Alaska. This time Powley was stationed far from the mainland, all the way at the end of the Aleutian Chain at Shemya Air Force Base. Being so far away from 'civilization,' Powley said working at Shemya

was a challenge.

"It was a real experience," he recounted. "Shemya is at the end of all supply lines so we couldn't rely on replacement parts. I had 25 mechanics who learned how to repair rather than replace parts."

After spending only a year at Shemya, Powley was sent back to Illinois where he taught for six months and was then assigned as the school superintendent.

In 1988, the Air Force asked Powley if he'd like to work at Eielson Air Force Base, near Fairbanks, Alaska. This new assignment would make Powley the base's vehicle maintenance superintendent.

"My response was an immediate 'yes,'" said Powley, who had been hooked on Alaska since his King Salmon days. "I saw -70° F, 45 days after I arrived and could not believe what cold did to vehicles. Engine belts break, CV boots crack, petroleum-based lubricants solidify, and metal parts crystallize just from exposure to super cold [weather]," he said of the challenges encountered in the Interior's climate.

Today, Powley is a senior master sergeant, has been on the T2 board for nearly three years, is a father of two children and has learned a lot about keeping his fleet of more than 800 vehicles running in Interior Alaska when, as Powley says, Mother Nature turns off the heat.

He must know what he's doing. Eielson AFB's Vehicle Maintenance Branch was recognized as the best by Headquarters Pacific Air Forces last year.

For the future Powley said, "I plan to finish my bachelor's degree in business with a minor in teaching."

1993 T2 CALENDAR OF EVENTS

DATE	EVENT	SPONSOR/CONTACT	LOCATION
Oct 26-29	*NHI #13401 Principals of Writing Highway Construction Specifications	DOT&PF, 907/474-7800	West Coast International Inn, Anchorage
Nov 1-4	NHI #13401 Principals of Writing Highway Construction Specifications	DOT&PF, 907/474-7800	Westmark Fairbanks Hotel, Fairbanks
Nov 3-5	31st Road & Street Maintenance Supervisors' School	Washington State University, 509/335-3530	Everett Pacific Hotel, Everett, Washington
Nov 3	Metrication in Transportation	T2 Program, 907/ 474-4800	Alaska Native Brotherhood Hall, Juneau
Nov 4	Metrication in Transportation	T2 Program, 907/ 474-7800	Hilton Hotel, Anchorage, Bristol Bay Ball Room
Nov 5	Metrication in Transportation	T2 Program, 907/ 474-7800	Westmark Fairbanks Hotel, Fairbanks, Gold Room
Nov 15-18	NHI #14126 FHWA Appraisal and Appraisal Review for Federal, State, and Local Programs	DOT&PF, 907/ 474-7800	Sheraton Anchorage Hotel, Anchorage
Dec 15	29th Annual Alaska Surveying and Mapping Conference Call for Papers	Don Davis, 907/ 786-1349 or Tom Eidel, 907/ 271-3426. See insert.	Anchorage, Alaska
Feb 7-11, 1994	29th Annual Alaska Surveying and Mapping Conference	Richard Gubitosa, 907/ 345-1483	Anchorage, Alaska

* National Highway Institute

Meetings Around Alaska			
Society	Chapter	Meeting Days	Location
ASCE	Anchorage Fairbanks Juneau	Monthly, 3rd Tues., noon Monthly, 3rd Fri., noon Monthly, 1st Fri., noon*	Northern Lights Inn Captain Bartlett Inn Breakwater Inn *except June - August
ASPE	Fairbanks	Monthly, 1st Fri., noon	Captain Bartlett Inn
ASPLS	Anchorage Fairbanks	Monthly, 3rd Tues., noon Monthly, 4th Tues., noon	Executive Cafeteria Federal Building Sunset Inn
ITE	Anchorage	Monthly, Thurs., noon	Sourdough Mining Company
IRWA	Sourdough Ch. 49 Arctic Trails Ch. 71 Totem Ch. 59	Monthly, 3rd Thurs., noon** Monthly, 2nd Thurs., noon# Monthly, 1st Wed., noon	West Coast Internat'l Inn **except July & Dec. Captain Bartlett Inn *except December Mike's Place, Douglas
APWA	Anchorage Christmas Party	October 21st, noon December 3rd, 6:00	West Coast International Inn Oriental Gardens
ICBO	Northern Chapter	Monthly, 1st Wed., noon	Zach's, Sophie Station
AWRA	Northern Region	Monthly, 3rd Wed., noon Brown Bag Lunch	Rm 531 Duckering Bldg., University of Alaska Fairbanks, Larry Hinzman, 474-7331

To publicize an event in our calendar, contact us at (907) 451-5320.